



Application No.: 10/064,549

RD-28294

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to:

Assistant Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450 on December 20, 2005 (Date).

Typed or printed name: Rita M. Lynch

Signature: Rita M. Lynch

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re Application of:

H. I. Ringermacher et al.

: Group Art Unit: 2883

Application No. 10/064,549

: Examiner: C.M. Kalivoda

Filed: July 25, 2002

:

For: IMAGER

**DECLARATION UNDER 37 CFR 1.131**

Assistant Commissioner for Patents

Alexandria, VA 22313-1450

S I R:

We, Harry Israel Ringermacher, Clifford Bueno, Armin Horst Pfoh and Jiunn-Ru Jeffrey Huang, declare and state:

1. We are the coinventors of all of the claims of the patent application identified above and coinventors of the subject matter described and claimed therein.

2. Our invention was conceived prior to the July 22, 2002 filing date of U.S. Patent No. 6,806,473 (Honda). Specifically, on or about July 25, 2000, Clifford Bueno and Harry Israel Ringermacher had conceived an amorphous Silicon flexible x-ray panel, as evidenced by Exhibit A. Prior to July 19, 2002, we had conceived our invention as described and claimed in the subject patent application in the United States, as evidenced by Exhibit B.

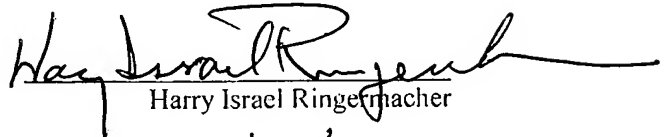
- a. Exhibit A is a Patent Disclosure Letter that describes an amorphous Silicon flexible x-ray panel. Exhibit A was submitted through the


disclosure system at GE Corporate Research and Development in July 2000, as evidenced on each of the pages of the Patent Disclosure Letter.

- b. Exhibit B is a Declaration for the patent application identified above. As indicated on Page 2 of Exhibit B, on or before July 19, 2002, each of Clifford Bueno, Armin Horst Pfoh and Jiunn-Ru Jeffrey Huang had approved the patent application identified above for filing.

3. We exercised due diligence in the preparation and filing of the present patent application from prior to the July 22, 2002 filing date of U.S. Patent No. 6,806,473 (Honda), and constructively reduced to practice our invention, by filing the subject patent application in the United States on July 25, 2002.

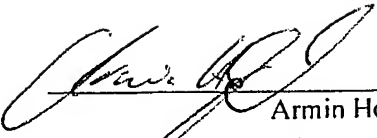
The undersigned declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of this application or any patent issuing thereon.

  
Harry Israel Ringelbacher  
Date: 12/13/05

  
Clifford (nmp) Bueno  
Date: 11/21/05

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\_\_\_\_\_  
Armin Horst Pfoh  
Date: 11/4/05

\_\_\_\_\_  
Jiunn-Ru Jeffrey Huang  
Date: \_\_\_\_\_

Application No.: 10/064,549

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Date: \_\_\_\_\_



Jiunn-Ru Jeffrey Huang

Date: 12/15/2005

**DISCLOSURE LETTER OUTLINE**

Building KW Room: D254

Date: 7/25/2000

**Distribution:**

Patent Operation

Original &amp; 2 Copies\*

via Lab Manager

Immediate Manager: J. Bray,

K. Herd

Inventor(s): H. Ringermacher,  
C. Bueno

Laboratory Manager of each inventor: \*

Pete Atherton 7-28-00

Building KW  
SCHENECTADY, NEW YORK

Room:

**SUBJECT: PATENT DISCLOSURE LETTER**  
on: Amorphous Silicon Flexible X-ray Panel (FlexRay)M. Singer  
High Priority  
Pet A.1. **OBJECT OF INVENTION** (e.g., problem, opportunity, prior art)

Prior art Apollo x-ray panel is relatively thick, fragile and rigid thus limiting applications in certain areas, for example, industrial applications where thin profile, robustness and flexibility are requisite. This invention creates a x-ray panel similar to Apollo using a thin polyimide substrate rather than glass.

2. **DESCRIPTION OF INVENTION**

The panel structure would consist of an approximately 2-mil thick polyimide sheet upon which is deposited an amorphous silicon (a-silicon) matrix of photocells of 100-200 micron pitch. Each cell would feed a thin-film-transistor (TFT), photolithographed in place. The photosensitive layer would be coated with approximately 100 microns of Thallium-doped Cesium Iodide (CsI:Tl) scintillator. Other phosphor coatings such as thin layers of gadolinium oxysulfide with terbium oxide activation could be used in lieu of CsI. This would all be encapsulated in a protective sheet comprising a total thickness of 10-15 mils. The panel would be end-connected with array lines on opposite sides brought down at right angles to meet the third side as a linear array for the electronics thus ensuring panel flexibility. "FlexRay" is a possible product name.

3. **OTHER INFORMATION** (e.g., test data, reduction to practice, planned use)M. Singer  
7/31/00

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Polyimide a-silicon sheet is manufactured by Iowa Thin Films Technology, Inc. Application of photolithography at high resolution to polyimide/a-silicon has not been demonstrated. Applications include nondestructive evaluation for pipeline, nuclear facilities, aircraft, tight spaces, permanent conformal requirements, embedded sensing and medical applications as an "exact" film substitute for existing film systems. Specific potential benefits of such an invention are as follows:

- Thin detectors can be placed, or flexed into hard to access locations in a manner consistent with film use.
- Thin, lightweight, flexible detectors can be permanently embedded in structures (such as under insulation in aircraft) for easy monitoring of critical areas without disassembly.
- Large rolls of the technology can be developed so that scanning requirements are reduced. For example, a large detector can be wrapped about a fuselage for frame inspection in combination with a panoramic x-ray tube.
- The flexible nature of the detector will enable the columnar structure of the CsI to be directly parallel with the diverging x-ray beam, assuring high spatial resolution of the detector off the center-line of the device.

#### 4. RECORDS

Standard GE patent notebook entry.

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\* Disclosure Letter should be addressed to Lab Manager of each inventor.

Page: 1 Date: 7/25/00

Mr  
7/31/00

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5. WITNESSES AND DATE

READ AND UNDERSTOOD BY:

WITNESS:

Date:

Signature

7/27/00

\*INVENTOR:

Signature

Harry I. Ringermacher

Type Inventor's Name

MBPL

Laboratory or Program

Date: 7/26/00

READ AND UNDERSTOOD BY:

WITNESS:

Date:

Signature

7-27-00

\*INVENTOR:

Signature

Clifford Bueno

Type Inventor's Name

MBPL

Laboratory or Program

Date: 7/26/00

\*When the invention is joint, all inventors should sign and date the disclosure letter.

(Complete and attach an Invention Disclosure Statement, Form RD-506A, for each inventor.)

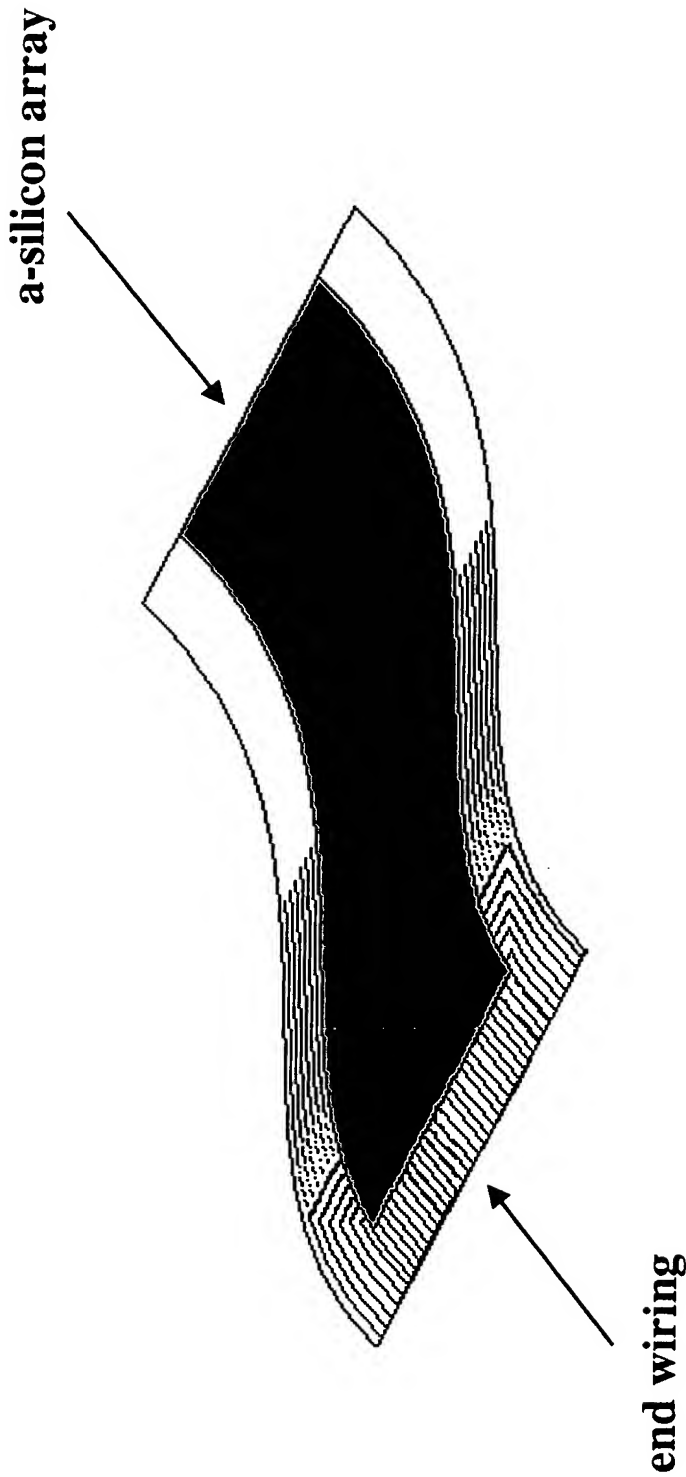
Print hard copy for signatures and deliver to Patent Operation.

7/1/94

MS  
7/31/00

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# Flexible Amorphous Silicon X-ray Panel



*RF* 7/26/00  
*CB* 7/26/00

EXHIBIT A p 4 of 4

GE CRD (Harry Ringermacher 8\*833-5469) GE Proprietary Information

7/26/00

MS 7/31/00

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## DECLARATION FOR PATENT APPLICATION

Docket Number  
RD-28,294

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

**FLEXIBLE IMAGER AND DIGITAL IMAGING METHOD**

the specification of which is attached hereto unless the following box is checked:

☐ was filed on \_\_\_\_\_ as United States Application Number or PCT International Application Number \_\_\_\_\_ and was amended on \_\_\_\_\_ (if applicable).

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56. I hereby claim foreign priority benefits under Title 35, United States Code, §119(a)-(d) of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

**Prior Foreign Application**

Priority Claimed

\_\_\_\_\_  
(Number) (Country) (Day/Month/Year Filed)

☐ Yes ☐ No

\_\_\_\_\_  
(Number) (Country) (Day/Month/Year Filed)

☐ Yes ☐ No

I hereby claim the benefit under Title 35, United States Code, §119(e) of any **United States provisional application(s)** listed below.

\_\_\_\_\_  
(Application Number) (Filing Date)

\_\_\_\_\_  
(Application Number) (Filing Date)

I hereby claim the benefit under Title 35, United States Code §120 of any **United States Application(s)** listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations, §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

\_\_\_\_\_  
(Application Number) (Filing Date) (Status - patented, pending, abandoned)

\_\_\_\_\_  
(Application Number) (Filing Date) (Status - patented, pending, abandoned)

I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith, **CUSTOMER NO. 006147.**

Penny A. Clarke, Reg. No. 46,627

Christian G. Cabou, Reg. No. 35,467, Jill M. Breedlove, Reg. No. 32,684, Donald S. Ingraham, Reg. No. 33,714, Noreen C. Johnson, Reg. No. 38,929, Patrick K. Patnode, Reg. No. 40,121, Ronald E. Myrick, Reg. No. 26,315, Henry J. Policinski, Reg. No. 26,621, James W. Mitchell, Reg. No. 25,602, Bernard Snyder, Reg. No. 24,843, Catherine J. Winter, Reg. No. 38,364, and John F. Beninati, Reg. No. 40,510.

Address all telephone calls to: Penny A. Clarke at telephone number (518) 387-5349

Address all correspondence to: **General Electric Company  
CRD Patent Docket Rm 4A59  
P.O. Box 8, Bldg. K-1  
Schenectady, New York 12301**

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

## SOLE OR FIRST INVENTOR:

Full name: Harry Israel Ringermacher

First Name

Middle Name

Last Name

Signature: Harry Israel Ringermacher

Date

July 22, 2002Residence: Delanson, New York

City and State

Citizenship: USAPost Office Address: 1054 Main Street, Delanson, New York 12053

## SECOND JOINT INVENTOR:

Full name: Clifford (nmn) Bueno

First Name

Middle Name

Last Name

Signature: Clifford Bueno

Date

7/18/02Residence: Clifton Park, New York

City and State

Citizenship: USAPost Office Address: 21 Nadeau Road, Clifton Park, New York 12065

## THIRD JOINT INVENTOR:

Full name: Armin Horst Pfoh

First Name

Middle Name

Last Name

Signature: Armin Horst Pfoh

Date

7/19/02Residence: Niskayuna, New York

City and State

Citizenship: GermanPost Office Address: 213 Mohawk Trail, Niskayuna, New York 12309

## FOURTH JOINT INVENTOR:

Full name: Jiunn-Ru Jeffrey Huang

First Name

Middle Name

Last Name

Signature: Jiunn-Ru Jeffrey Huang

Date

7/15/02Residence: Clifton Park, New York

City and State

Citizenship: TaiwanPost Office Address: Hollandale Apartments, 45-E, Clifton Park, New York 12065

GE Docket No. 28294-1

# CHECKLIST 4

## RESPONSE TO FINAL OFFICE ACTION

- |   | YES<br>[ ]                          | NO<br>[ ] | NA<br><input checked="" type="checkbox"/> |
|---|-------------------------------------|-----------|---|
| 1. If there is a restriction requirement, have you consulted with the GE Counsel to determine whether any divisional applications should be filed now? Check NA only if no restriction requirement.   |                                     |           | <input checked="" type="checkbox"/>       |
| 2. Is the inventorship correct based on the presently pending claims?   | <input checked="" type="checkbox"/> | [ ]       |   |
| 3. Have you consulted with the GE Counsel as to whether any allowed claims, or claims indicated to contain allowable subject matter, should be permitted to issue? Check NA only if no claims have been allowed.  | <input checked="" type="checkbox"/> | [ ]       | [ ]                                       |
| 4. Is the response to this final rejection being submitted within two months of the Final Office Action?  | <input checked="" type="checkbox"/> | [ ]       |   |
| 5. Have you consulted with the GE Counsel as to whether, if, in an advisory action, the Examiner persists in the rejection(s), further action should be taken, e.g., filing an appeal or a continuation or RCE, or initiating an interview?   | <input checked="" type="checkbox"/> | [ ]       |   |
| 6. Have you communicated to the inventors the duty to disclose obligation regarding information that may be material to the disclosed or claimed invention?   | <input checked="" type="checkbox"/> | [ ]       |   |
| 7. Have you determined whether any previously-unsubmitted material prior art has been cited in any foreign corresponding applications? Check NA only no foreign corresponding applications have been filed.   | <input checked="" type="checkbox"/> | [ ]       | [ ]                                       |
| 8. If new material information has been discovered, have you prepared an IDS to submit all material information including, but not limited to: (a) prior art cited during the prosecution of any Legally Related applications or foreign corresponding applications; (b) rejections of substantially similar claims in any domestic or foreign office actions; (c) prior art uncovered in any search of the prior art applicable to the disclosed or claimed invention; (d) material information regarding the use (including GE products), sale, offer for sale, publication, or disclosure applicable to the disclosed or claimed invention; and (e) any other material information known to you? Check NA only if no new material information has been discovered. | [ ]                                 | [ ]       | <input checked="" type="checkbox"/>       |

This is to certify that the response to this patent application has been prepared in conformity with the GE Manual for US-Originated Global Patent Applications including this Checklist 4 and that any "NO" answers have been discussed with the GE Counsel prior to filing the response.

A COPY OF THIS CHECKLIST IS TO BE RETAINED AS A PERMANENT PART OF THE FILE OF THIS APPLICATION

Signature of Preparing IP Attorney/Agent

Date

Name of Preparing IP Attorney/Agent

Name of Firm or GE Business